BRIEF DESCRIPTION OF THE DRAWINGS

[0036] The above and/or other aspects will be more apparent by describing certain exemplary embodiments with reference to the accompanying drawings, in which:

[0037] FIGS. **1**A, **1**B, **1**C and **1**D are diagrams illustrating operation of a 3D display apparatus according to various exemplary embodiments;

[0038] FIGS. **2**A, **2**B and **2**C are diagrams illustrating configuration of a 3D display apparatus according to various exemplary embodiments;

[0039] FIGS. **3**A and **3**B are block diagrams illustrating a configuration of a 3D display apparatus according to various exemplary embodiments;

[0040] FIGS. **4**A, **4**B and **4**C are diagrams explaining a method of performing crosstalk inverse compensation according to various exemplary embodiments;

[0041] FIGS. **5** and **6** are diagrams illustrating comparison between an optical view-based crosstalk calculation method and an image view-based crosstalk calculation method according to various exemplary embodiments;

[0042] FIGS. **7**, **8**, **9**A, **9**B and **10** are diagrams illustrating a theoretical crosstalk calculation method according to various exemplary embodiments;

[0043] FIGS. **11**, **12**A, **12**B and **12**C are diagrams illustrating a coefficient adjusting method of a crosstalk inverse filter according to various exemplary embodiments;

[0044] FIG. **13** is a diagram illustrating a crosstalk inverse compensation method according to an exemplary embodiment;

[0045] FIG. **14** is a diagram illustrating an epipolar image generation method according to an exemplary embodiment; and

[0046] FIG. **15** is a flowchart illustrating a control method of a 3D display apparatus according to an exemplary embodiment.

DETAILED DESCRIPTION OF EXEMPLARY EMBODIMENTS

[0047] Hereinafter, exemplary embodiments are described in greater detail with reference to the accompanying drawings.

[0048] In the following description, unless otherwise described, the same reference numerals are used for the same elements, even when they are depicted in different drawings. The matters defined in the description, such as detailed construction and elements, are provided to assist in a comprehensive understanding of exemplary embodiments. Thus, it is understood that exemplary embodiments can be carried out without those specifically defined matters. Also, functions or elements known in the related art are not described in detail because they would obscure the exemplary embodiments with unnecessary detail.

[0049] It will be understood that the terms "includes", "including", "comprises" and/or "comprising" used herein specify the presence of stated features or components, but do not preclude the presence or addition of one or more other features or components. In addition, the terms such as "unit," "-er (-or)," and "module" described in the specification refer to an element for performing at least one function or operation, and may be implemented in hardware, software, or the combination of hardware and software.

[0050] FIGS. **1**A to **1**D are diagrams illustrating an operation of a 3D display apparatus according to various exemplary embodiments.

[0051] FIG. **1**A illustrates an operation method of a 3D display apparatus which displays a multiview image and provides a stereoscopic image through an autostereoscopic manner according to an exemplary embodiment. The multiview image includes a plurality of images in which the same object is imaged at different angles. That is, an image, in which the plurality of images imaged in different viewpoints are refracted to different angles, and thus focused at a position a certain distance from the display (for example, about 3 meters) called a viewing distance, may be provided. The position in which a viewing zone is formed may be called an optical view. One eye of a user may be positioned in a first viewing zone and the other eye of the user may be positioned in a second viewing zone. Thus, the user may experience a 3D effect.

[0052] The 3D display apparatus according to an exemplary embodiment may provide one optical view using a plurality of image views. For example, the 3D display apparatus may generate the plurality of image views through rendering an input image, and may generate a multiview image such that at least two image views among the plurality of image views are provided as one optical view. FIG. **1**A is a diagram illustrating a display operation, for example, in response to four optical views being provided using total eight image views having different eight viewpoints. Referring to FIG. **1**A, in the autostereoscopic 3D display apparatus, among the eight viewpoints, light corresponding to images of first and second viewpoints may be projected to the left eye, and light corresponding to images of third and fourth viewpoints may be projected to the right eye. The user may view the images having different viewpoints through the left eye and the right eye, and thus the user may experience the 3D effect. However, this is merely exemplary, and in response to M optical views being provided using image views corresponding to total N viewpoints, where N is greater than M, one optical view may be configured of image views having N/M viewpoints. The 3D display apparatus may provide seven optical views using 35 image views as illustrated in FIG. **1**C differently from an exemplary embodiment which provides seven optical views using seven image views as illustrated in FIG. **1**B.

[0053] FIG. **1**D illustrates the exemplary embodiment illustrated in FIG. **1**C in greater detail. Referring to FIG. **1**D, a total of seven optical views **11** to **17** may be provided, and each optical view may include five image views (sub views or virtual viewpoint images). That is, the seven optical views **11** to **17** may be provided using 35 total image views **20** (1 to 35). For example, a first optical view **11** may be provided using first to fifth image views. In this example, in response to a parallax between neighboring optical views being A, a parallax between neighboring image views may be A/5. A parallax between a left eye and a right eye may be A which is the parallax between the neighboring optical views. Accordingly, smooth viewing area conversion may differ from the exemplary embodiment of FIG. **1**B in which the number of image views is equal to the number of optical views. However, according to another exemplary embodiment, the number of image views may be equal to the number of optical views in at least one viewing zone. That is, in response to the number of image views being A, the